PA310 Clip-on CT Smart Power Meter

User guide

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Chapter 1 Introduction

1.1 Product Introduction

PA310 is designed for electric power monitoring and load recording for single or three phase systems. It can be directly used in low voltage systems due to its wide range current measurement (up to 1000A). PA310 can also maintain better than 1% (IEC62053-21) accuracy even under low current condition (< 5A), thus it still can be used in middle to high voltage system. The unique features of PA310 including：internal 5A CT or Clip-on CT, bi-directional measurement, long time load recording, and standard communication. Its compact size, easy installation, and low cost make PA310 suitable for modern electricity monitoring and load investigation.

Features

- Clip-on CT, easily wiring especially for on-line installation
- Optional in 5A CT(internal), without Clip-on CT
- Meter ID can be set up through the panel buttons
- Wide measurement range, suitable for low voltage system
- Wh accuracy is better than 0.5%(pf=1)
- Up to 10000 load profile records with configurable recording interval
- RS485 communication support Modbus protocol

1.2 Caution

1.2.1 Danger⚠

The meter contains hazardous voltages. The meter should never be disassembled. Failure to observe this practice can result in serious injury or death. Any work on or near energized meters, meter sockets, or other metering equipment can present a danger of electrical shock. It is strongly recommended that all work should be performed only by qualified industrial electricians and metering specialist. Archmeter assumes no responsibility if your electrical installer does not follow the appropriate national and local electrical codes.

1.2.2 PRODUCT WARRANTY & CUSTOMER SUPPORT

Archmeter warrants all products free from defects in material and workmanship for a period of one year from the date of shipping. During the warranty period, we will, at our position, either repair any product that proves to be defective. To report any defect, please contact ：+886-3-5631359 or sales@archmeter.com.

Please have the model, serial number and a detailed problem description available when you call. If the problem concerns a particular reading, please have all meter readings available. When returning any merchandise to Archmeter, a return SN. is required.

1.2.3 LIMITATION OF WARRANTY

This warranty does not apply to defects resulting from unauthorized modification, misuse, or use for reason other than electrical power monitoring. The supplied meter is not a user-serviceable product.

1.2.4 Ordering code

PA310-□

5A：internal 5A CT
10A: CTΦ10mm(10mA~10A)
10：CTΦ10mm(30mA~60A)
16：CTΦ16mm(50mA~100A)
24：CTΦ24mm(80mA~200A)
36：CTΦ36mm(100mA~300A)
400: CTΦ31.6mm(0.5A~400A)
1000：CTΦ50.8mm(1A~1000A)
over 1000A:optional in flexible Rogowski Coil CT

Chapter 2 Specification

2.1 Meter Specification

Voltage input	10-480V
Current input	Internal CT：5A Clip-on CT：CT Φ10 (10mA~10A or 30mA~60A)，optional in CT Φ16 (50mA~120A)，Φ24(80mA~200A)，Φ31.6(0.5A~400A)，Φ50.8(1A~1000A)
AUX. Power	100-240Vac, 1A, 5VA
kWh Accuracy	pf=1,<0.5%, pf=0.5 <1%, better than IEC-1036
Starting Current	<0.001Ib
Frequency	50/60Hz
Display	Mono LCD
Wiring	Auto detection，1P2W、1P3W、3P3W-2CT、3P3W-3CT、3P4W
Comm I/F	RS485 ， half duplex isolated Baud Rate：9600 ， 19200
Protocol	Modbus over RS485
Load profile	2groups, group 1 max. 12 channels, group 2 max. 8 channels VL-Nave, I ave, kWtot, kvartot, kvatot kWh+, kWh-, kvarh+, kvarh-, kVAh kWh, kvarh, kVAh Programmable interval Max store：104 days （interval = 15 mins） / channel
RTC	RTC, with 950mAh battery
Measures	VA-N, VB-N, VC-N, VL-Nave VA-B, VB-C, VC-A, VL-Lave I A, I B,I C, I ave PFA, PFB, PFC kWA, kWB, kWC, kWtot kvarA, kvarB, kvarC, kvartot kvaA, kvaB, kvaC, kvatot Wh+, Wh-, VArh+, VArh-, Vah, Hz
Surge Winstand	ANSI C37.90.1
Size	110(L) × 75(W) × 120(H) mm
Operation Temp	-20℃~60 ℃
Installation	Rail-mounted
Terminals	2 × 10 terminals, IP20

2.2 Certificate

1. LVD Test: EN61010-1
2. CE Test：
   - EN61326 Conducted Emission
   - EN61326 Radiated Emission
   - EN61000-3-2 Harmonic Current Emission
   - EN61000-3-3 Voltage Fluctuation and Flicker
   - EN61000-4-2 Electrostatic Discharge
   - EN61000-4-3 Radiated Susceptibility
   - EN61000-4-4 Electrical Fast Transient/Burst
   - EN61000-4-5 Surge
   - EN61000-4-6 Conducted Susceptibility
   - EN61000-4-8 Power Frequency magnetic Field
   - EN61000-4-11 Voltage Dips and Interruption
3. FCC Test：Class A and CISPR 22

Chapter 3 Installation

3.1 Safety

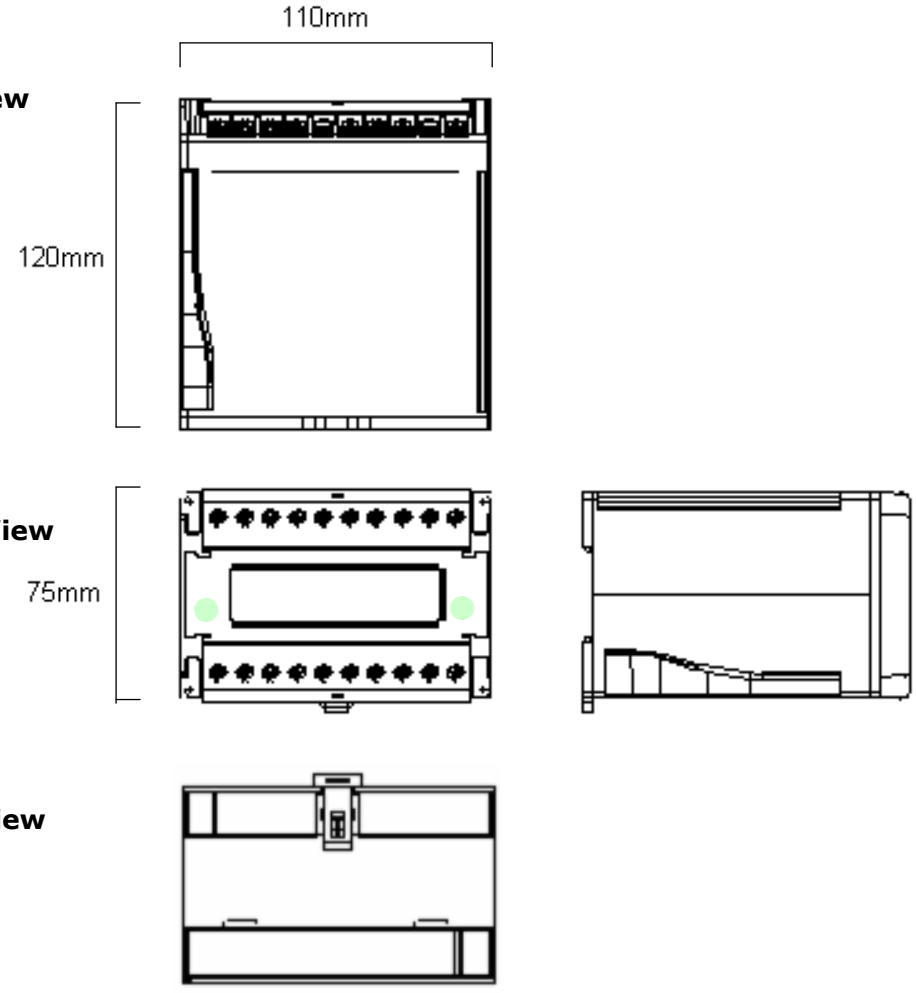
On receipt of the instrument and prior to installation, makes sure it has not been damaged during shipment. The instrument is no longer safe when,

a) shows clear signs of damage
b) does not work
c) long storage under extreme conditions
d) damage during shipment

3.2 Mounting

- This instrument should install on vibration free switchboard and with environment temperature between -20℃~60℃, humility between 20-90%RH（no condensing）
- For the instrument is already equipped with an internal protection fuse, a 1AmAT HBC fuse is recommended during installation
- Prior to maintain/repair this instrument, always disconnect this instrument from all power sources
- Only have qualified and authorized personnel to carry out installation, maintenance and repair

3.2.1 Size and Latch



- Products size 110mm*75mm*120mm
- Products come with external CT's, don't disconnect CT's and don't connect the CT signal from secondary side
- Please read the operation guide before suing
- Reconfirm the RST(ABC) phase sequence of the power system
- The instrument is rail or rack mounting design. No need the cut out the panel or drill the holes for

mounting
- Aux power for this instrument is 1Ø 50/60 HZ, 100-240

Voltage Input
- This instrument can measure voltage up to a maximum 480V between phase-phase. Further than voltage (480V), please add the PT in front.
- Confirm the RST (ABC) phase sequence.

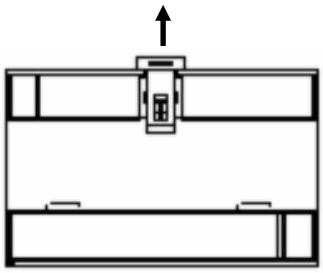
Current Input
- The external CT's are friable, please handle with care.
- The current input for this instrument is in mA range. Only the attached CT's can be used. The normal CT's from panel will damage the instrument due to its large current (around 5A)
- When more than one instrument will be installed, please do not disconnect the CT with its instrument. Each instrument is calibrated with matching CT's.
- To install CT's, confirm the lines with terminals and latch on the split CT with each cable. (Detail will be found in next section)
- CT bending area is quite frangible; please handle with extra care, especially when the space between CT's are limited.
- The current direction must follow K-L marked on CT
- Please select the right size CT for different size current cables.
- The maximum current value can not exceed the CT rating.
- 2CT or 3CT both can be applied in 3P3W connection, however, 2CT will result in incorrection calculation on kW, kWh, kVa, and kVar. 3CT is always recommended for 3Ø system.

3.2.2 Step by step mounting procedure

- **Mounting**

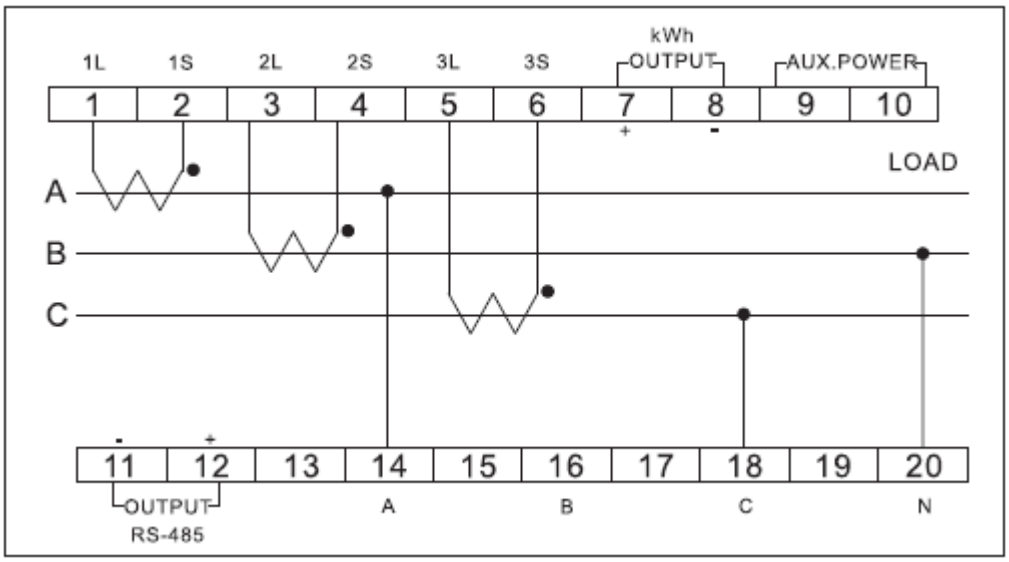
Pull up the back latch and mount the instrument on to the real

Back view



- **Wiring**

Check the terminal from 1-6 and make sure the respective CT to the respective line. Be aware of the current direction must follow the sign K-L in the CT. Click on each CT.
Connect each voltage wire to the terminals(ABCN) please note that for 3P3W connection, B and N terminal must be short-circuit. Therefore, the connection will be CAN for 3 phase and 3 wire connection. Lastly connect Aux. power onto terminal 9 and 10



3.2.3 Dismounting

- **Wire disconnection**

1. Open the clicked CT first and remove CTS from lines，Do not disconnect CT from terminals.
2. Disconnect the voltage input wires from terminals and wrap the wire tips with plastic tape.
3. Disconnect the communication wires from terminal.
4. Disconnect the Aux power from terminal and wrap the wire tip with plastic tape.

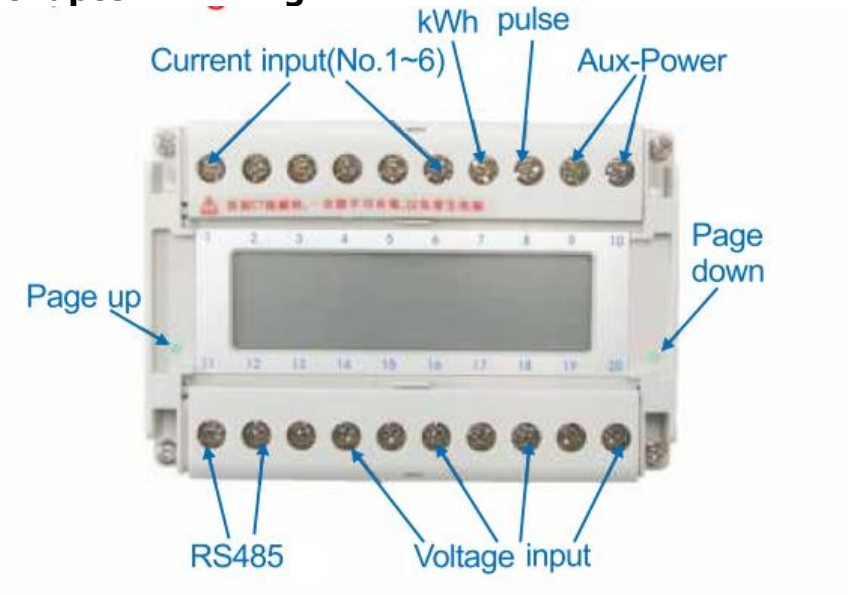
- **Dismount**

Pull up the latch located in the back of the meter, the meter can be removed from the rack or rail

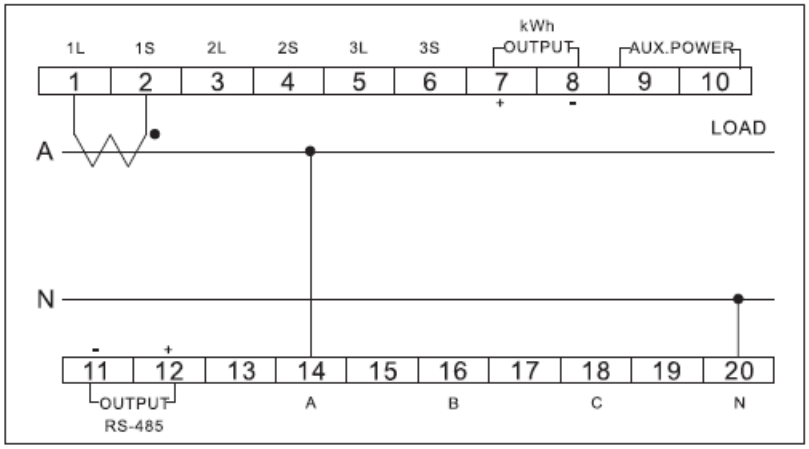
3.2.4 Instructions of button usage

1. Press the left button for 5 seconds and will enter to setting mode.
2. The hundred digits will glitter. The right button is for adjusting numbers; the left button is for transposing. (Hundred digit→ ten digit→ unit digit→hundred digit)
3. Press the left button for 5 seconds for saving and leaving setting mode. (If it detects that the modbus ID entered value is smaller than 1 or bigger than 255, the modbus ID will stay in previous setting value.)
4. If there are no button operations within 30 seconds then it will leave setting mode. Any setting won't be saved.

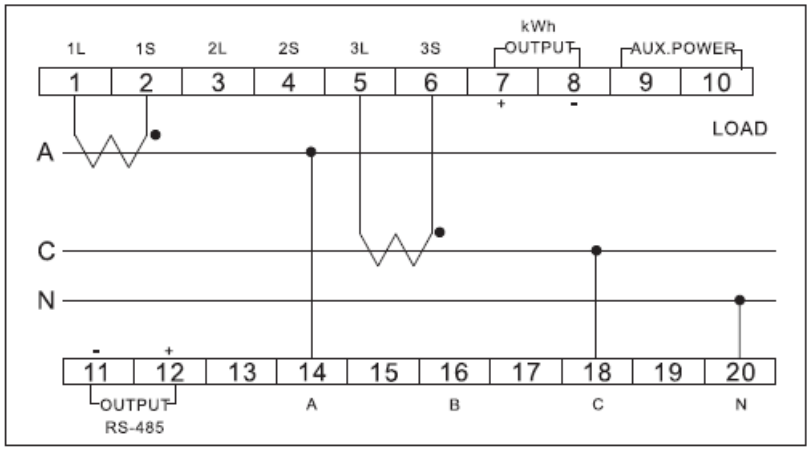
Chapter 4 Wiring



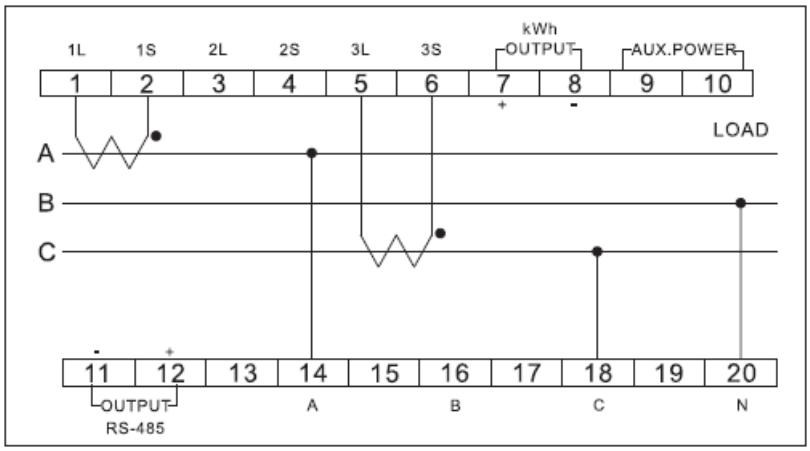
- **1P2W-1CT**



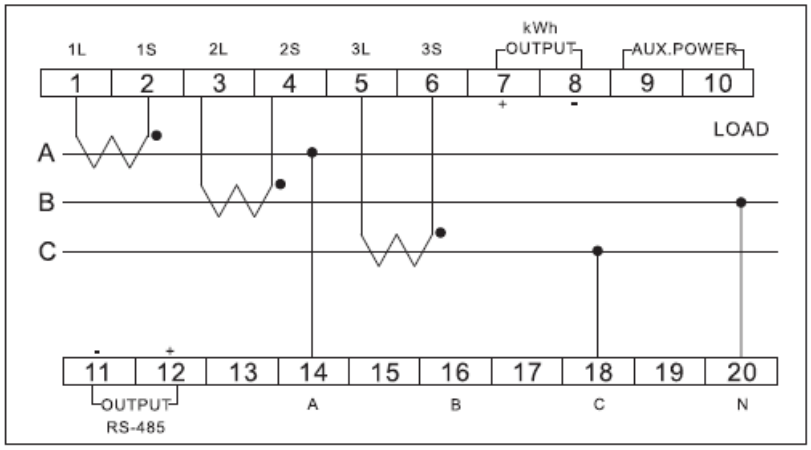
- **1P3W-2CT**



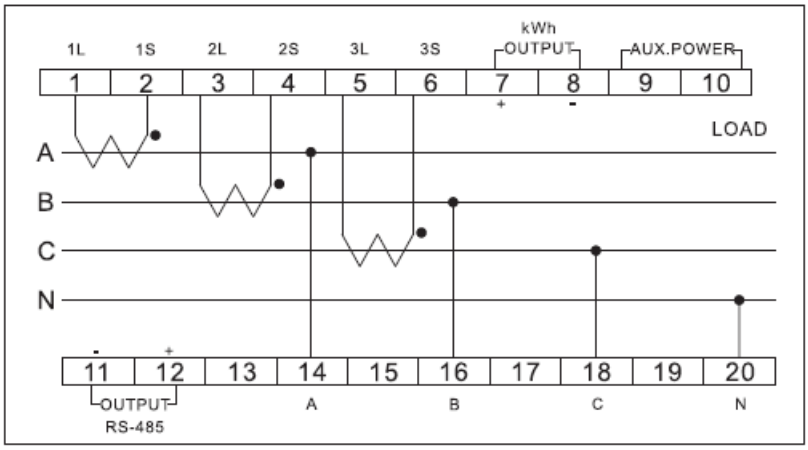
- **3P3W-2CT**



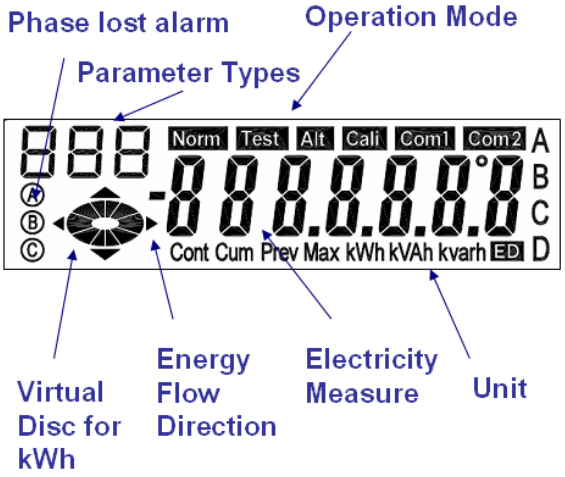
- **3P3W-3CT**



- **3P4W-3CT**



Chapter 5 LCD Display



Default Display Item Table

99051208	Meter series sequence first 8 digital	
05XXXXXXX	meter series 8 digital	
001	A phase voltage(L-N)	
002	B phase voltage(L-N)	
003	C phase voltage(L-N)	
004	V_{AB} (L-L)	
005	V_{BC}(L-L)	
006	V_{CA}(L-L)	
007	A phase current	
008	B phase current	
009	C phase current	
010	A phase kw	
011	B phase kw	
012	C phase kw	
013	A phase PF	
014	B phase PF	
015	C phase PF	
016	Kwh-deliver	
017	PT ratio	
018	CT ratio	
046	Date	
047	Time	
048	Modbus Address	Default is 15
049	Baud Rate	Default is 19200
050	Stop Bit	Default is 1

Chapter 6 Communication format

6.1 Instruction of Service program

- **Purpose**

The service program was designed to：

1. Setup PA310 meter parameters for initial use, such as baud rate, modbus address, Pt ration ….etc…;
2. determine the data group which will be recorded in the meter memory;
3. examine or read the meter data on-line; and
4. download data from the meter to an excel file at your computer

- **Initial Setup for Communication with your computer**

Execute the system program by double click "meter setting .exe" which was in your CD (No installation is necessary)
A RS485 to Ethernet (USB) converter is needed if your computer does not support RS485.
Connect PA310 with converter and to your computer as instructed in PA310 manual and converter manual.
After the connection, find the com port assigned by your computer (control panel ➔ system ➔ Hardware ➔ Hardware Manager ➔ Connection port (COM and LPT)
5. Enter the Com Port NO. in upper middle of the first page, meter address (default is 15) and Baud Rate (default is 19200) then click the On-Line buffoon next to Baud Rate item.
6. Now, you can read the real time data from your screen.

- **Run the Service Program**
  - Meter setting page

1. Items can be modified are all located in button half of the first page, called meter setting.
2. Drag and select the desired data or directly enter the numbers into the window, then click the button to make the change.
3. When the Time Setting button was clicked, the time of your computer will be assigned as the meter time.
4. On the right side of this page, default display item was listed. If changed is necessary, click Open Data Item List button to examine the entire display item. Use the display setting to add the item to be displayed in your meter by selecting the number and item. If item to be removed from display list, enter "0" to the No. window and item no. which will be removed, and then click the Display Item Setting.
5. Scroll time means the display tine of your meter for each item.

  - Load Profile setting page,

This page allows users to determine those data will be stored. For data stored frequency could be different, two groups are designed.

1. Open data item list by clicking Open Data Item List button which is not the same as display item list.
2. Assign the data item number in each group.
3. For group 1, 12 items can be assigned from 1 to 12
4. For group 2, 8 items can be assigned from 1 to 8
5. For each group users can decide how many items will be actually stored in the meter memory. Fox examples, if Data Counter is 8, it means only from No. 1 to No.8 will be stored every 15 minutes if 15 is entered to the interval window.
6. Same for Group2 setting don't forget to click setting button to trigger the change.
7. Please note that if data counter was changed, all the load profile data in the meter will be deleted.

  - Load profile basic data and Read Page

This page show the content of group 1 and group 2 data and their intervals, data counter as set in previous page. This content can not be modified in this page. The purpose of this page is to transfer the data from meter to your computer and store in an excel file.

1. Valid in intervals are the total number of data set stored in the meter memory now.
2. Max intervals are the number of data set that the memory space of the meter can store.
3. To transfer the data, users need to specify which group, starting no of data set and ending no of data set.
4. After click the Read and save button, an excel file will be created in a folder named LP data and date will be part of file name. Only one file will be created in one day regardless more them one data transfer.

  - Load Profile data page

Users can read the meter stored data on-line at this page. Only eight data set will be shown in the left column. For instance, if no 1 was entered in the Begin Interval window, data for selected group from 1 to 8 can be reviewed in the left column. The other two columns are for designer's use.

6.2 Communication format

- **Protocol** :Modbus（8N1）
- **format**

  Bits per Byte：1 start bit

  8 data bits, least significant bit sent first

  1 stop bits

  Error Check：Cyclical Redundancy Check（CRC）
- **Baud Rate**：9600 or 19200（default）
- **Modbus slave address**：1-255（default：15）
- **Modbus Function Code**：03h, 04h, 10h

Code	MODBUS_ name	Description
03h	Read Holding Registers	Read the contents of read/write location
04h	Read Input Registers	Read the contents of read only location
10h	Pre-set Multiple Registers	Set the contents of read/write location

Note: Maxima information reading of Function 03 and Function04 is 125 registers

- **format**

  Integer：16 bits

  Unsigned Integer：16 bits

  Float：IEEE 754 Format，each with 2 register, Low Word is first priority in transmit

IEEE 754 Format

Data Hi Word，Hi Byte	Data Hi Word，Lo Byte	Data Lo Word，Hi Byte	Data Lo Word，Lo Byte
SEEE EEEE	EMMM MMMM	MMMM MMMM	MMMM MMMM

$$\textbf{Value} = (-1)^{S} 2^{E-127} (1.M) \quad 0 < E < 255$$

Where:

S represents the sign bit where 1 is negative and 0 is positive

E is the two's complement exponent with an offset of 127. i.e. an exponent of zero is represented by 127, an exponent of 1 by 128 etc.

M is the 23-bit normal mantissa. The highest bit is always 1 and, therefore, is not stored.

- **Transmit priority**

1	2	3	4
Data Lo Word，Hi Byte	Data Lo Word，Lo Byte	Data Hi Word，Hi Byte	Data Hi Word，Lo Byte

6.3 Modbus Register

Modus Register	Modus Address		Parameter Name	Length (word)	Data Type	Range	Default Value	Uints	R/W	command
	high	Low								
	Holding Register									
40001	00h	00h	PT_Ratio	2	float	1-6250	1		R/W	
40002	00h	01h								
40003	00h	02h	CT_Ratio	2	float	1-2400	1		R/W	1:f5:5 , 2400:12000:5
40004	00h	03h								
44097	10h	00h	Modbus_Address	1	UInt	1-200	15		R/W	
44098	10h	01h	BaudRate_set	1	UInt	1-2	2		R/W	1 : 9600 , 2 : 19200,
44099	10h	02h	StopBit	1	Uint	1-2	1		R/W	1 : 1 stop , 2 : 2 stops
44100	10h	03h		1						
44101	10h	04h	Wiring	1	Uint	0-5			R/W	0 : Auto , 1 : 1P2W , 2 : 1P3W 3 : 3P3W-2CT (ACN) 4 : 3P3W-3CT (ACN) 5 : 3P4W Y 6 : 3P4W Delta , 7 : 1P3W 1V2A 8 : 3P3W 2CT (ABC) 9 : 3P3W 3CT (ABC) 10 : Network
44102	10h	05h								
44103	10h	06h		1						
44104	10h	07h		1						
44105	10h	08h	Meter_ID	6	12-byte ASCII				R/W	
44106	10h	09h								
44107	10h	0ah								
44108	10h	0bh								
44109	10h	0ch								
44110	10h	0dh								
44111	10h	0eh		1						
44112	10h	0fh		1						
44113	10h	10h		1						
44114	10h	11h		1						
44115	10h	12h	Clr_kWh	1	Int	55h : clr			W	
44116	10h	13h		1						
44117	10h	14h		1						
44118	10h	15h		1						
44119	10h	16h		1						
44120	10h	17h		1						
44121	10h	18h		1						
44122	10h	19h		1						
44123	10h	1ah		1						

44124	10h	1bh		1						
44125	10h	1ch		1						
44126	10h	1dh		1						
44127	10h	1eh		1						
44128	10h	1fh		1						
44129	10h	20h	Kt_Value	1	Int		720		R	0.3 Wh - 43.2Wh
44130	10h	21h	Voltage_Transformer_Ratio	1	Uint	1-62500	10		R/W	0.1-6250
44131	10h	22h	Current_Transformer_Ratio	1	Uint	1-2400	1		R/W	1:5:5 , 2400:12000:5
44132	10h	23h	Year	1	Uint	00-99			R/W	
44133	10h	24h	Month	1	Uint	1-12			R/W	
44134	10h	25h	Date	1	Uint	1-31			R/W	
44135	10h	26h	hour	1	Uint	0-23			R/W	
44136	10h	27h	minute	1	Uint	0-59			R/W	
44137	10h	28h	second	1	Uint	0-59			R/W	
44138	10h	29h	DAY_OF_WEEK	1	Uint	0(Sunday) - 6(Saturday)			R/W	
44139	10h	2ah		1						
44140	10h	2bh		1						
44141	10h	2ch		1						
44142	10h	2dh		1						
44143	10h	2eh		1						
44144	10h	2fh		1						
44145	10h	30h	DEMAND_FLAG	1	Int	0 or 1			R/W	0:Block , 1:Rolling
44146	10h	31h	SUB_Interval	1	Int	1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60			R/W	
44147	10h	32h	Interval_MULTIPLIER	1	Int	1,2,3,4,5,6, 10			R/W	
44148	10h	33h	LP_Data_Group1_Clr		unsigned int	33h				
44149	10h	34h	LP_Group1_DataCounter		Integer	1-12			R/W	
44150	10h	35h	LP_Group1_IntLength		Integer	1,5,10,15,30,or 60			R/W	
44151	10h	36h	LP_G1_Ch1_Save Data		Integer	1-14 , 101-160			R/W	
44152	10h	37h	LP_G1_Ch2_Save Data		Integer	1-14 , 101-160			R/W	
44153	10h	38h	LP_G1_Ch3_Save Data		Integer	1-14 , 101-160			R/W	
44154	10h	39h	LP_G1_Ch4_Save Data		Integer	1-14 , 101-160			R/W	
44155	10h	3ah	LP_G1_Ch5_Save Data		Integer	1-14 , 101-160			R/W	
44156	10h	3bh	LP_G1_Ch6_Save Data		Integer	1-14 , 101-160			R/W	Refer to LP table
44157	10h	3ch	LP_G1_Ch7_Save Data		Integer	1-14 , 101-160			R/W	
44158	10h	3dh	LP_G1_Ch8_Save Data		Integer	1-14 , 101-160			R/W	
44159	10h	3eh	LP_G1_Ch9_Save Data		Integer	1-14 , 101-160			R/W	
44160	10h	3fh	LP_G1_Ch10_Save Data		Integer	1-14 , 101-160			R/W	
44161	10h	40h	LP_G1_Ch11_Save Data		Integer	1-14 , 101-160			R/W	

44162	10h	41h	LP_G1_Ch12_Save Data		Integer	1-14 , 101-160			R/W	
44163	10h	42h	LP_Data_Group2_ Clr		Integer	33h			R	
44164	10h	43h	LP_Group2_DataC ounter		Integer	1-8			R	
44165	10h	44h	LP_Group2_IntLen gth		Integer	1,5,10,15,3 0,or 60			R	
44166	10h	45h	LP_G2_Ch1_Save Data		Integer	1-14 , 101-160			R	Refer to LP table
44167	10h	46h	LP_G2_Ch2_Save Data		Integer	1-14 , 101-160			R	
44168	10h	47h	LP_G2_Ch3_Save Data		Integer	1-14 , 101-160			R	
44169	10h	48h	LP_G2_Ch4_Save Data		Integer	1-14 , 101-160			R	
44170	10h	49h	LP_G2_Ch5_Save Data		Integer	1-14 , 101-160			R	
44171	10h	4ah	LP_G2_Ch6_Save Data		Integer	1-14 , 101-160			R	
44172	10h	4bh	LP_G2_Ch7_Save Data		Integer	1-14 , 101-160			R	
44173	10h	4ch	LP_G2_Ch8_Save Data		Integer	1-14 , 101-160			R	
44174	10h	4dh	LP_Read_Begin_Int erval_Serial_numbe r		Integer				R	
44175	10h	4eh			Int				R/W	
44176	10h	4fh	Display_Serial_num _Sel	1	Int	0-1			R/W	0:refer to 1-50 orders 1:refer to Display_Item_No
44177	10h	50h	Display_ON_TIME	1	Int	3-15 sec			R/W	
44178	10h	51h	MFG_SERIAL_NU MBER_Display_Fla g	1	Int	0 or 1			R/W	MFG_SERIAL_NUMBER
44179	10h	52h	DISPLAY1_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	items of display
44180	10h	53h	DISPLAY2_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	
44181	10h	54h	DISPLAY3_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	
44182	10h	55h	DISPLAY4_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	
44183	10h	56h	DISPLAY5_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	
44184	10h	57h	DISPLAY6_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	
44185	10h	58h	DISPLAY7_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	
44186	10h	59h	DISPLAY8_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	
44187	10h	5ah	DISPLAY9_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	
44188	10h	5bh	DISPLAY10_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	
44189	10h	5ch	DISPLAY11_ITEM_ NO	1	Int	Refer to Display_Ite m			R/W	

44190	10h	5dh	DISPLAY12_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44191	10h	5eh	DISPLAY13_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44192	10h	5fh	DISPLAY14_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44193	10h	60h	DISPLAY15_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44194	10h	61h	DISPLAY16_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44195	10h	62h	DISPLAY17_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44196	10h	63h	DISPLAY18_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44197	10h	64h	DISPLAY19_ITEM_NO	1	Int	Refe to Display_Item			R/W	
44198	10h	65h	DISPLAY20_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44199	10h	66h	DISPLAY21_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44200	10h	67h	DISPLAY22_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44201	10h	68h	DISPLAY23_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44202	10h	69h	DISPLAY24_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44203	10h	6ah	DISPLAY25_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44204	10h	6bh	DISPLAY26_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44205	10h	6ch	DISPLAY27_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44206	10h	6dh	DISPLAY28_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44207	10h	6eh	DISPLAY29_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44208	10h	6fh	DISPLAY30_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44209	10h	70h	DISPLAY31_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44210	10h	71h	DISPLAY32_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44211	10h	72h	DISPLAY33_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44212	10h	73h	DISPLAY34_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44213	10h	74h	DISPLAY35_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44214	10h	75h	DISPLAY36_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44215	10h	76h	DISPLAY37_ITEM_NO	1	Int	Refer to Display_Item			R/W	

44216	10h	77h	DISPLAY38_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44217	10h	78h	DISPLAY39_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44218	10h	79h	DISPLAY40_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44219	10h	7ah	DISPLAY41_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44220	10h	7bh	DISPLAY42_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44221	10h	7ch	DISPLAY43_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44222	10h	7dh	DISPLAY44_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44223	10h	7eh	DISPLAY45_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44224	10h	7fh	DISPLAY46_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44225	10h	80h	DISPLAY47_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44226	10h	81h	DISPLAY48_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44227	10h	82h	DISPLAY49_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44228	10h	83h	DISPLAY50_ITEM_NO	1	Int	Refer to Display_Item			R/W	
44229	10h	84h		1						
44230	10h	85h		1						
44231	10h	86h		1						
44232	10h	87h		1						
44233	10h	88h		1						
44234	10h	89h		1						
44235	10h	8ah		1						
44236	10h	8bh		1						
44237	10h	8ch		1						
44238	10h	8dh		1						
44239	10h	8eh		1						
44240	10h	8fh		1						

44865	13h	00h	kWh_deliver_a	2	Float					IEEE 754 32-bit Floating
44866	13h	01h								
44867	13h	02h	kWh_receiver_a	2	Float					IEEE 754 32-bit Floating
44868	13h	03h								
44869	13h	04h	kvarh_lagging_a	2	Float					IEEE 754 32-bit Floating
44870	13h	05h								
44871	13h	06h	kvarh_leading_a	2	Float					IEEE 754 32-bit Floating
44872	13h	07h								

44873	13h	08h	kVAh_a	2	Float					IEEE 754 32-bit Floating
44874	13h	09h								
44875	13h	0ah	kWh_deliver_b	2	Float					IEEE 754 32-bit Floating
44876	13h	0bh								
44877	13h	0ch	kWh_receiver_b	2	Float					IEEE 754 32-bit Floating
44878	13h	0dh								
44879	13h	0eh	kvarh_lagging_b	2	Float					IEEE 754 32-bit Floating
44880	13h	0fh								
44881	13h	10h	kvarh_leading_b	2	Float					IEEE 754 32-bit Floating
44882	13h	11h								
44883	13h	12h	kVAh_b	2	Float					IEEE 754 32-bit Floating
44884	13h	13h								
44885	13h	14h	kWh_deliver_c	2	Float					IEEE 754 32-bit Floating
44886	13h	15h								
44887	13h	16h	kWh_receiver_c	2	Float					IEEE 754 32-bit Floating
44888	13h	17h								
44889	13h	18h	kvarh_lagging_c	2	Float					IEEE 754 32-bit Floating
44890	13h	19h								
44891	13h	1ah	kvarh_leading_c	2	Float					IEEE 754 32-bit Floating
44892	13h	1bh								
44893	13h	1ch	kVAh_c	2	Float					IEEE 754 32-bit Floating
44894	13h	1dh								
44895	13h	1eh	kWh_deliver_total	2	Float					IEEE 754 32-bit Floating
44896	13h	1fh								
44897	13h	20h	kWh_receiver_total	2	Float					IEEE 754 32-bit Floating
44898	13h	21h								
44899	13h	22h	kvarh_lagging_total	2	Float					IEEE 754 32-bit Floating
44900	13h	23h								
44901	13h	24h	kvarh_leading_total	2	Float					IEEE 754 32-bit Floating
44902	13h	25h								
44903	13h	26h	kVAh_total	2	Float					IEEE 754 32-bit Floating
44904	13h	27h								

Input Register

Refer to 107eh - 10c3h, in different sequence
after V2403

31025	04h	00h	Vln_a	2	Float					IEEE 754 32-bit Floating
31026	04h	01h								
31027	04h	02h	Vln_b	2	Float					IEEE 754 32-bit Floating
31028	04h	03h								
31029	04h	04h	Vln_c	2	Float					IEEE 754 32-bit Floating
31030	04h	05h								

31031	04h	06h	Vln_avg	2	Float					IEEE 754 32-bit Floating
31032	04h	07h								
31033	04h	08h	Vll_ab	2	Float					IEEE 754 32-bit Floating
31034	04h	09h								
31035	04h	0ah	Vll_bc	2	Float					IEEE 754 32-bit Floating
31036	04h	0bh								
31037	04h	0ch	Vll_ca	2	Float					IEEE 754 32-bit Floating
31038	04h	0dh								
31039	04h	0eh	Vll_avg	2	Float					IEEE 754 32-bit Floating
31040	04h	0fh								
31041	04h	10h	I_a	2	Float					IEEE 754 32-bit Floating
31042	04h	11h								
31043	04h	12h	I_b	2	Float					IEEE 754 32-bit Floating
31044	04h	13h								
31045	04h	14h	I_c	2	Float					IEEE 754 32-bit Floating
31046	04h	15h								
31047	04h	16h	I_avg	2	Float					IEEE 754 32-bit Floating
31048	04h	17h								
31049	04h	18h	保留	2	Float					IEEE 754 32-bit Floating
31050	04h	19h								
31051	04h	1ah	Freq	2	Float					IEEE 754 32-bit Floating
31052	04h	1bh								
31053	04h	1ch	kW_a	2	Float					IEEE 754 32-bit Floating
31054	04h	1dh								
31055	04h	1eh	kW_b	2	Float					IEEE 754 32-bit Floating
31056	04h	1fh								
31057	04h	20h	kW_c	2	Float					IEEE 754 32-bit Floating
31058	04h	21h								
31059	04h	22h	kW_total	2	Float					IEEE 754 32-bit Floating
31060	04h	23h								
31061	04h	24h	kVar_a	2	Float					IEEE 754 32-bit Floating
31062	04h	25h								
31063	04h	26h	kVar_b	2	Float					IEEE 754 32-bit Floating
31064	04h	27h								
31065	04h	28h	kVar_c	2	Float					IEEE 754 32-bit Floating
31066	04h	29h								
31067	04h	2ah	kVar_total	2	Float					IEEE 754 32-bit Floating
31068	04h	2bh								
31069	04h	2ch	kVA_a	2	Float					IEEE 754 32-bit Floating
31070	04h	2dh								
31071	04h	2eh	kVA_b	2	Float					IEEE 754 32-bit Floating
31072	04h	2fh								
31073	04h	30h	kVA_c	2	Float					IEEE 754 32-bit Floating

31074	04h	31h								
31075	04h	32h	kVA_total	2	Float					IEEE 754 32-bit Floating
31076	04h	33h								
31077	04h	34h	PF_signed_a	2	Float					IEEE 754 32-bit Floating
31078	04h	35h								
31079	04h	36h	PF_signed_b	2	Float					IEEE 754 32-bit Floating
31080	04h	37h								
31081	04h	38h	PF_signed_c	2	Float					IEEE 754 32-bit Floating
31082	04h	39h								
31083	04h	3ah	PF_signed_avg	2	Float					IEEE 754 32-bit Floating
31084	04h	3bh								
31085	04h	3ch	PhaseAngle_V_a	2	Float					IEEE 754 32-bit Floating
31086	04h	3dh								
31087	04h	3eh	PhaseAngle_V_b	2	Float					IEEE 754 32-bit Floating
31088	04h	3fh								
31089	04h	40h	PhaseAngle_V_c	2	Float					IEEE 754 32-bit Floating
31090	04h	41h								
31091	04h	42h	PhaseAngle_I_a	2	Float					IEEE 754 32-bit Floating
31092	04h	43h								
31093	04h	44h	PhaseAngle_I_b	2	Float					IEEE 754 32-bit Floating
31094	04h	45h								
31095	04h	46h	PhaseAngle_I_c	2	Float					IEEE 754 32-bit Floating
31096	04h	47h								

Refer to10c6h - 10cfh ,10d4h - 10f1h, in different sequence
after V2403

31153	04h	80h	kWh_deliver_a	2	Float					IEEE 754 32-bit Floating
31154	04h	81h								
31155	04h	82h	kWh_receiver_a	2	Float					IEEE 754 32-bit Floating
31156	04h	83h								
31157	04h	84h	kvarh_lagging_a	2	Float					IEEE 754 32-bit Floating
31158	04h	85h								
31159	04h	86h	kvarh_leading_a	2	Float					IEEE 754 32-bit Floating
31160	04h	87h								
31161	04h	88h	kVAh_a	2	Float					IEEE 754 32-bit Floating
31162	04h	89h								
31163	04h	8ah	kWh_deliver_b	2	Float					IEEE 754 32-bit Floating
31164	04h	8bh								
31165	04h	8ch	kWh_receiver_b	2	Float					IEEE 754 32-bit Floating
31166	04h	8dh								
31167	04h	8eh	kvarh_lagging_b	2	Float					IEEE 754 32-bit Floating
31168	04h	8fh								
31169	04h	90h	kvarh_leading_b	2	Float					IEEE 754 32-bit Floating

31170	04h	91h								
31171	04h	92h	kVAh_b	2	Float					IEEE 754 32-bit Floating
31172	04h	93h								
31173	04h	94h	kWh_deliver_c	2	Float					IEEE 754 32-bit Floating
31174	04h	95h								
31175	04h	96h	kWh_receiver_c	2	Float					IEEE 754 32-bit Floating
31176	04h	97h								
31177	04h	98h	kvarh_lagging_c	2	Float					IEEE 754 32-bit Floating
31178	04h	99h								
31179	04h	9ah	kvarh_leading_c	2	Float					IEEE 754 32-bit Floating
31180	04h	9bh								
31181	04h	9ch	kVAh_c	2	Float					IEEE 754 32-bit Floating
31182	04h	9dh								
31183	04h	9eh	kWh_deliver_total	2	Float					IEEE 754 32-bit Floating
31184	04h	9fh								
31185	04h	a0h	kWh_receiver_total	2	Float					IEEE 754 32-bit Floating
31186	04h	a1h								
31187	04h	a2h	kvarh_lagging_total	2	Float					IEEE 754 32-bit Floating
31188	04h	a3h								
31189	04h	a4h	kvarh_leading_total	2	Float					IEEE 754 32-bit Floating
31190	04h	a5h								
31191	04h	a6h	kVAh_total	2	Float					IEEE 754 32-bit Floating
31192	04h	a7h								

(4 bytes) - primary after V2403

31537	06h	00h	Vln_a	2	Unsigned Long			0.1		
31538	06h	01h								
31539	06h	02h	Vln_b	2	Unsigned Long			0.1		
31540	06h	03h								
31541	06h	04h	Vln_c	2	Unsigned Long			0.1		
31542	06h	05h								
31543	06h	06h	Vln_avg	2	Unsigned Long			0.1		
31544	06h	07h								
31545	06h	08h	Vll_ab	2	Unsigned Long			0.1		
31546	06h	09h								
31547	06h	0ah	Vll_bc	2	Unsigned Long			0.1		
31548	06h	0bh								
31549	06h	0ch	Vll_ca	2	Unsigned Long			0.1		
31550	06h	0dh								
31551	06h	0eh	Vll_avg	2	Unsigned Long			0.1		
31552	06h	0fh								
31553	06h	10h	I_a	2	Unsigned			0.1		

31554	06h	11h			Long					
31555	06h	12h	I_b	2	Unsigned Long			0.1		
31556	06h	13h								
31557	06h	14h	I_c	2	Unsigned Long			0.1		
31558	06h	15h								
31559	06h	16h	I_avg	2	Unsigned Long			0.1		
31560	06h	17h								
31561	06h	18h	reserve	2	Unsigned Long					
31562	06h	19h								
31563	06h	1ah	Freq	2	Unsigned Long			0.1		
31564	06h	1bh								
31565	06h	1ch	kW_a	2	Long			0.1		
31566	06h	1dh								
31567	06h	1eh	kW_b	2	Long			0.1		
31568	06h	1fh								
31569	06h	20h	kW_c	2	Long			0.1		
31570	06h	21h								
31571	06h	22h	kW_total	2	Long			0.1		
31572	06h	23h								
31573	06h	24h	kVar_a	2	Long			0.1		
31574	06h	25h								
31575	06h	26h	kVar_b	2	Long			0.1		
31576	06h	27h								
31577	06h	28h	kVar_c	2	Long			0.1		
31578	06h	29h								
31579	06h	2ah	kVar_total	2	Long			0.1		
31580	06h	2bh								
31581	06h	2ch	kVA_a	2	Long			0.1		
31582	06h	2dh								
31583	06h	2eh	kVA_b	2	Long			0.1		
31584	06h	2fh								
31585	06h	30h	kVA_c	2	Long			0.1		
31586	06h	31h								
31587	06h	32h	kVA_total	2	Long			0.1		
31588	06h	33h								
31589	06h	34h	PF_signed_a	2	Long			0.001		
31590	06h	35h								
31591	06h	36h	PF_signed_b	2	Long			0.001		
31592	06h	37h								
31593	06h	38h	PF_signed_c	2	Long			0.001		
31594	06h	39h								
31595	06h	3ah	PF_signed_avg	2	Long			0.001		
31596	06h	3bh								

31597	06h	3ch	PhaseAngle_V_a	2	Long			0.1		
31598	06h	3dh								
31599	06h	3eh	PhaseAngle_V_b	2	Long			0.1		
31600	06h	3fh								
31601	06h	40h	PhaseAngle_V_c	2	Long			0.1		
31602	06h	41h								
31603	06h	42h	PhaseAngle_I_a	2	Long			0.1		
31604	06h	43h								
31605	06h	44h	PhaseAngle_I_b	2	Long			0.1		
31606	06h	45h								
31607	06h	46h	PhaseAngle_I_c	2	Long			0.1		
31608	06h	47h								

(4 bytes) - primary after V2403

31665	06h	80h	kWh_deliver_a	2	Unsigned Long			0.1		
31666	06h	81h								
31667	06h	82h	kWh_receiver_a	2	Unsigned Long			0.1		
31668	06h	83h								
31669	06h	84h	kvarh_lagging_a	2	Unsigned Long			0.1		
31670	06h	85h								
31671	06h	86h	kvarh_leading_a	2	Unsigned Long			0.1		
31672	06h	87h								
31673	06h	88h	kVAh_a	2	Unsigned Long			0.1		
31674	06h	89h								
31675	06h	8ah	kWh_deliver_b	2	Unsigned Long			0.1		
31676	06h	8bh								
31677	06h	8ch	kWh_receiver_b	2	Unsigned Long			0.1		
31678	06h	8dh								
31679	06h	8eh	kvarh_lagging_b	2	Unsigned Long			0.1		
31680	06h	8fh								
31681	06h	90h	kvarh_leading_b	2	Unsigned Long			0.1		
31682	06h	91h								
31683	06h	92h	kVAh_b	2	Unsigned Long			0.1		
31684	06h	93h								
31685	06h	94h	kWh_deliver_c	2	Unsigned Long			0.1		
31686	06h	95h								
31687	06h	96h	kWh_receiver_c	2	Unsigned Long			0.1		
31688	06h	97h								
31689	06h	98h	kvarh_lagging_c	2	Unsigned Long			0.1		
31690	06h	99h								
31691	06h	9ah	kvarh_leading_c	2	Unsigned Long			0.1		
31692	06h	9bh								

31693	06h	9ch	kVAh_c	2	Unsigned Long			0.1		
31694	06h	9dh								
31695	06h	9eh	kWh_deliver_total	2	Unsigned Long			0.1		
31696	06h	9fh								
31697	06h	a0h	kWh_receiver_total	2	Unsigned Long			0.1		
31698	06h	a1h								
31699	06h	a2h	kvarh_lagging_total	2	Unsigned Long			0.1		
31700	06h	a3h								
31701	06h	a4h	kvarh_leading_total	2	Unsigned Long			0.1		
31702	06h	a5h								
31703	06h	a6h	kVAh_total	2	Unsigned Long			0.1		
31704	06h	a7h								

(2 bytes) - secondary after V2403

32049	08h	00h	Vln_a	1	Unsigned Int			0.1		
32050	08h	01h	Vln_b	1	Unsigned Int			0.1		
32051	08h	02h	Vln_c	1	Unsigned Int			0.1		
32052	08h	03h	Vln_avg	1	Unsigned Int			0.1		
32053	08h	04h	Vll_ab	1	Unsigned Int			0.1		
32054	08h	05h	Vll_bc	1	Unsigned Int			0.1		
32055	08h	06h	Vll_ca	1	Unsigned Int			0.1		
32056	08h	07h	Vll_avg	1	Unsigned Int			0.1		
32057	08h	08h	I_a	1	Unsigned Int			0.1		
32058	08h	09h	I_b	1	Unsigned Int			0.1		
32059	08h	0ah	I_c	1	Unsigned Int			0.1		
32060	08h	0bh	I_avg	1	Unsigned Int			0.1		
32061	08h	0ch	保留	1	Unsigned Int			0.1		
32062	08h	0dh	Freq	1	Unsigned Int			0.1		
32063	08h	0eh	kW_a	1	Int			0.1		
32064	08h	0fh	kW_b	1	Int			0.1		
32065	08h	10h	kW_c	1	Int			0.1		
32066	08h	11h	kW_total	1	Int			0.1		
32067	08h	12h	kVar_a	1	Int			0.1		
32068	08h	13h	kVar_b	1	Int			0.1		
32069	08h	14h	kVar_c	1	Int			0.1		
32070	08h	15h	kVar_total	1	Int			0.1		
32071	08h	16h	kVA_a	1	Int			0.1		
32072	08h	17h	kVA_b	1	Int			0.1		
32073	08h	18h	kVA_c	1	Int			0.1		
32074	08h	19h	kVA_total	1	Int			0.1		

32075	08h	1ah	PF_signed_a	1	Int			0.001		
32076	08h	1bh	PF_signed_b	1	Int			0.001		
32077	08h	1ch	PF_signed_c	1	Int			0.001		
32078	08h	1dh	PF_signed_avg	1	Int			0.1		
32079	08h	1eh	PhaseAngle_V_a	1	Int			0.1		
32080	08h	1fh	PhaseAngle_V_b	1	Int			0.1		
32081	08h	20h	PhaseAngle_V_c	1	Int			0.1		
32082	08h	21h	PhaseAngle_I_a	1	Int			0.1		
32083	08h	22h	PhaseAngle_I_b	1	Int			0.1		
32084	08h	23h	PhaseAngle_I_c	1	Int			0.1		

Meter data

34097	10h	00h	MANUFACTURER	5	10-byte ASCII					
34098	10h	01h								
34099	10h	02h								
34100	10h	03h								
34101	10h	04h								
34102	10h	05h	Meter_Mode	5	10-byte ASCII					
34103	10h	06h								
34104	10h	07h								
34105	10h	08h								
34106	10h	09h								
34107	10h	0ah	HW_VERSION_NUMBER	1	Int	0-255				
34108	10h	0bh	FW_VERSION_NUMBER	1	Int	0-255				
34109	10h	0ch	MFG_SERIAL_NUMBER	8	16-byte ASCII					
34110	10h	0dh								
34111	10h	0eh								
34112	10h	0fh								
34113	10h	10h								
34114	10h	11h								
34115	10h	12h								
34116	10h	13h								
34117	10	14h	CT 規格	1	Uint	0-5				0 : CT-10 , 1 : CT-16 , 2 : CT-24 ; 3 : 400A ; 4 : 1000A ; 5 : 3000A
	Meter measurement data									
34223	10h	7Eh	Freq	2	Float					IEEE 754 32-bit Floating
34224	10h	7fh								
34225	10h	80h	Vln_a	2	Float					IEEE 754 32-bit Floating
34226	10h	81h								

34227	10h	82h	Vln_b	2	Float					
34228	10h	83h								
34229	10h	84h	Vln_c	2	Float					
34230	10h	85h								
34231	10h	86h	Vln_avg	2	Float					
34232	10h	87h								
34233	10h	88h	Vll_ab	2	Float					
34234	10h	89h								
34235	10h	8ah	Vll_bc	2	Float					
34236	10h	8bh								
34237	10h	8ch	Vll_ca	2	Float					
34238	10h	8dh								
34239	10h	8eh	Vll_avg	2	Float					
34240	10h	8fh								
34241	10h	90h	I_a	2	Float					
34242	10h	91h								
34243	10h	92h	I_b	2	Float					
34244	10h	93h								
34245	10h	94h	I_c	2	Float					
34246	10h	95h								
34247	10h	96h	I_avg	2	Float					
34248	10h	97h								
34249	10h	98h	kW_a	2	Float					
34250	10h	99h								
34251	10h	9ah	kW_b	2	Float					
34252	10h	9bh								
34253	10h	9ch	kW_c	2	Float					
34254	10h	9dh								
34255	10h	9eh	kW_total	2	Float					
34256	10h	9fh								
34257	10h	a0h	kVar_a	2	Float					
34258	10h	a1h								
34259	10h	a2h	kVar_b	2	Float					
34260	10h	a3h								
34261	10h	a4h	kVar_c	2	Float					
34262	10h	a5h								
34263	10h	a6h	kVar_total	2	Float					
34264	10h	a7h								
34265	10h	a8h	kVA_a	2	Float					
34266	10h	a9h								
34267	10h	aah	kVA_b	2	Float					
34268	10h	abh								
34269	10h	ach	kVA_c	2	Float					

34270	10h	adh								
34271	10h	aeh	kVA_total	2	Float					
34272	10h	afh								
34273	10h	b0h	PF_signed_a	2	Float					
34274	10h	b1h								
34275	10h	b2h	PF_signed_b	2	Float					
34276	10h	b3h								
34277	10h	b4h	PF_signed_c	2	Float					
34278	10h	b5h								
34279	10h	b6h	PF_signed_avg	2	Float					
34280	10h	b7h								
34281	10h	b8h	PhaseAngle_V_a	2	Float					
34282	10h	b9h								
34283	10h	bah	PhaseAngle_V_b	2	Float					
34284	10h	bbh								
34285	10h	bch	PhaseAngle_V_c	2	Float					
34286	10h	bdh								
34287	10h	beh	PhaseAngle_I_a	2	Float					
34288	10h	bfh								
34289	10h	c0h	PhaseAngle_I_b	2	Float					
34290	10h	c1h								
34291	10h	c2h	PhaseAngle_I_c	2	Float					
34292	10h	c3h								
34293	10h	c4h	Wiring	1	Unsigned Int					0 : non , 1 : 1P2W , 2 : 1P3W 3 : 3P3W-2CT , 4 : 3P3W-3CT 5 : 3P4W
34294	10h	c5h	Phase_Sequence	1	Unsigned Int	0-2				0 : none, 1 : ABC , 2 : CBA
34295	10h	c6h	kWh_deliver	2						Max.6 digits
34296	10h	c7h								
34297	10h	c8h	kWh_receiver	2	Float					
34298	10h	c9h								
34299	10h	cah	kvarh_lagging	2	Float					
34300	10h	cbh								
34301	10h	cch	kvarh_leading	2	Float					
34302	10h	cdh								
34303	10h	ceh	kVAh	2	Float					
34304	10h	cfh								
34305	10h	d0h								
34306	10h	d1h	Demand_Remain_Time	1	Uint			sec		
34307	10h	d2h	Demand - kW	2	Float					
34308	10h	d3h								
34309	10h	d4h	kWh_deliver_a	2	Float					Max.7 digits
34310	10h	d5h								

34311	10h	d6h	kWh_deliver_b	2	Float					
34312	10h	d7h								
34313	10h	d8h	kWh_deliver_c	2	Float					
34314	10h	d9h								
34315	10h	dah	kWh_receiver_a	2	Float					
34316	10h	dbh								
34317	10h	dch	kWh_receiver_b	2	Float					
34318	10h	ddh								
34319	10h	deh	kWh_receiver_c	2	Float					
34320	10h	dfh								
34321	10h	e0h	kvarh_lagging_a	2	Float					
34322	10h	e1h								
34323	10h	e2h	kvarh_lagging_b	2	Float					
34324	10h	e3h								
34325	10h	e4h	kvarh_lagging_c	2	Float					
34326	10h	e5h								
34327	10h	e6h	kvarh_leading_a	2	Float					
34328	10h	e7h								
34329	10h	e8h	kvarh_leading_b	2	Float					
34330	10h	e9h								
34331	10h	eah	kvarh_leading_c	2	Float					
34332	10h	ebh								
34333	10h	ech	kVAh_a	2	Float					
34334	10h	edh								
34335	10h	eeh	kVAh_b	2	Float					
34336	10h	efh								
34337	10h	f0h	kVAh_c	2	Float					
34338	10h	f1h								
34339	10h	f2h	H_kWh_deliver_a	2	Float					digits 8-14
34340	10h	f3h								
34341	10h	f4h	H_kWh_deliver_b	2	Float					digits 8-14
34342	10h	f5h								
34343	10h	f6h	H_kWh_deliver_c	2	Float					digits 8-14
34344	10h	f7h								
34345	10h	f8h	H_kWh_deliver_tot	2	Float					digits 8-14
34346	10h	f9h								
34347	10h	fah	H_kWh_receiver_a	2	Float					digits 8-14
34348	10h	fbh								
34349	10h	fch	H_kWh_receiver_b	2	Float					digits 8-14
34350	10h	fdh								
34351	10h	feh	H_kWh_receiver_c	2	Float					digits 8-14
34352	10h	ffh								
34353	11h	00h	H_kWh_receiver_to	2	Float					digits 8-14

34354	11h	01h	t							
34355	11h	02h	H_kvarh_lagging_a	2	Float					digits 8-14
34356	11h	03h								
34357	11h	04h	H_kvarh_lagging_b	2	Float					digits 8-14
34358	11h	05h								
34359	11h	06h	H_kvarh_lagging_c	2	Float					digits 8-14
34360	11h	07h								
34361	11h	08h	H_kvarh_lagging_tot	2	Float					digits 8-14
34362	11h	09h								
34363	11h	0ah	H_kvarh_leading_a	2	Float					digits 8-14
34364	11h	0bh								
34365	11h	0ch	H_kvarh_leading_b	2	Float					digits 8-14
34366	11h	0dh								
34367	11h	0eh	H_kvarh_leading_c	2	Float					digits 8-14
34368	11h	0fh								
34369	11h	10h	H_kvarh_leading_tot	2	Float					digits 8-14
34370	11h	11h								
34371	11h	12h	H_kVAh_a	2	Float					digits 8-14
34372	11h	13h								
34373	11h	14h	H_kVAh_b	2	Float					digits 8-14
34374	11h	15h								
34375	11h	16h	H_kVAh_c	2	Float					digits 8-14
34376	11h	17h								
34377	11h	18h	H_kVAh_tot	2	Float					digits 8-14
34378	11h	19h								
34497	11h	90h	LoadProfile_G1_Valid_Interval_number	1	Uint					
34498	11h	91h	LoadProfile_G2_Valid_Interval_number	1	Uint					

Meter Demand data

34513	11h	a0h								
34514	11h	a1h	Demand_Remain_Time	1	Uint			sec		
34515	11h	a2h	Real time Demand - kW	2	Float					
34516	11h	a3h								
34517	11h	a4h	Prev Demand - kW	2	Float					
34518	11h	a5h								

Meter LoadProfile data

	20h	00h	Grouop1 LoadProfile							

	20h	ffh								
	21h	00h	Grouop12LoadProfile							
	21h	ffh								

- **Display Item Table**

Item no	Description
1	Meter_ID first 8 digits
2	Meter_ID last 8 digits
3	CURRENT DATE
4	CURRENT TIME
5	Modbus Slave address
6	Modbus Baud Rate
7	PT ratio * CT ratio
8	PT ratio
9	CT ratio
10	Kt
11	Reset Counter
Diagnostic tools	
101	Vln_a
102	Vln_b
103	Vln_c
104	Vln_avg
105	Vll_ab
106	Vll_bc
107	Vll_ca
108	Vll_avg
109	I_a
110	I_b
111	I_c
112	I_avg
113	kW_a
114	kW_b
115	kW_c
116	kW_total
117	kVar_a
118	kVar_b

119	kVar_c
120	kVar_total
121	kVA_a
122	kVA_b
123	kVA_c
124	kVA_total
125	PF_signed_a
126	PF_signed_b
127	PF_signed_c
128	PF_signed_avg
129	PhaseAngle_V_a
130	PhaseAngle_V_b
131	PhaseAngle_V_c
132	PhaseAngle_I_a
133	PhaseAngle_I_b
134	PhaseAngle_I_c
135	kWh_deliver
136	kWh_receiver
137	kvarh_lagging
138	kvarh_leading
139	kVAh
140	Demand_Time_Remain
141	DEMAND - kW

Interval Table

	Sub Interval Multiplier						
Int Len	**1**	**2**	**3**	**4**	**5**	**6**	**10**
5	5	xx	xx	xx	1	xx	xx
6	6	3	2	xx	xx	1	xx
10	10	5	xx	xx	2	xx	1
12	12	6	4	3	xx	2	xx
15	15	xx	5	xx	3	xx	xx
20	20	10	xx	5	4	xx	2
30	30	15	10	xx	6	5	3
60	60	30	20	15	12	10	6

- **LoadProfile**

Each Interval saving formet

		Word 1		Word 2		Word 3		Word 4/5	Word 6/7	Word 8/9	Word 10/11	Word 12/13	Word 14/15	Word 16/17	Word 18/19	Word 20/21	Word 22/23	Word 24/25	Word 26/27
		high byte	Low byte	high byte	Low byte	high byte	Low byte												
1		Y	M	D	H	M	S	Data 1											
2		Y	M	D	H	M	S	Data 1	Data 2										
3		Y	M	D	H	M	S	Data 1	Data 2	Data 3									
4		Y	M	D	H	M	S	Data 1	Data 2	Data 3	Data 4								
5		Y	M	D	H	M	S	Data 1	Data 2	Data 3	Data 4	Data 5							
6		Y	M	D	H	M	S	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6						
7		Y	M	D	H	M	S	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7					
8		Y	M	D	H	M	S	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8				
9		Y	M	D	H	M	S	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9			
10		Y	M	D	H	M	S	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	Data 10		
11		Y	M	D	H	M	S	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	Data 10	Data 11	
12		Y	M	D	H	M	S	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	Data 10	Data 11	Data 12

INFO. NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
（word） （include time & info）	5	7	9	11	13	15	17	19	21	23	25	27
No. of saved info. In first group	39000	27600	21600	17400	15000	12600	11400	10200	9000	8400	7800	7200
No. of saved info. In second group	26000	18400	14400	11600	10000	8400	7600	6800				